HYDRAULIC JACKS
USE AND MAINTENANCE MANUAL

GENERAL INDEX

MANUFACTURER'S DECLARATION
Concerning hydraulic jack to be incorporated into a machine, according to directive 2006/42/EC.

RIMA S.P.A.
Via Sigalina a Mattina, 32 – 25018 MONTICHIARI (BS) ITALIA,
in the person of its pro tempore Legal Representative, Mr. Giorgio Zonta,

DECLARES
under his responsibility, in accordance with directive 2006/42/EC, that no hydraulic jacks manufactured by RIMA S.P.A. may be used if not incorporated into the machine it is intended for and until the same machine is declared to conform to directive 2006/42/EC and successive additions by the manufacturer, importer or installer of the machine.

AND FURTHER DECLARES THAT:

- all the hydraulic jacks are designed and manufactured applying the safety rules stated in directive 2006/42/EC.
- all the hydraulic jacks must operate at a temperature range suitable to the material used (see point 3, components features)
- if not otherwise indicated, all the hydraulic jacks must not be used at a pressure higher than 210 Bar;

RIMA S.P.A. DECLINES ALL RESPONSIBILITY FOR IMPROPER USE OF HYDRAULIC JACKS

Any arising dispute shall be governed by the court of Brescia.

Edition 2014 rev.1

1 INTRODUCTION

Introduction

This manual has been prepared by **RIMA S.p.A.** to provide the users of its hydraulic jacks with information about the safety standards connected to using, maintaining and overhauling the hydraulic jacks.
With the purpose of ensuring maximum operating reliability of its hydraulic jacks **RIMA S.P.A.** has carefully selected the materials and components used to manufacture the hydraulic jacks. All the components have been designed and manufactured to safely resist any stresses foreseen in their use.

Jack users

Trained person = a technician who knows about the equipment and rules relevant to the jack and to the machine on which they are fitted.
Informed person = operator who knows about his duties and who has basic information relevant to the specific risks and right use of the jack.
Final user = synonym of informed person

Symbols used in the manual

- This symbol indicates behaviour that is important also as far as safety is concerned. In case users do not respect these rules, any kind of manufacturer's liability will automatically cease.

- This symbol indicates that all the possible operations have been made on the hydraulic jack to eliminate or reduce risks, but that there are residual risks which users must be aware of.

Residual risks and information about hydraulic jack use

- Hydraulic jacks must not be used or worked on before carefully reading and completely understanding all parts of this manual

- The safety standards established for the machines or the equipment the hydraulic jacks are installed in are also valid for the hydraulic jacks.

- The machine operator is responsible for the correct use of the machine and the equipment. He must therefore know and apply the instructions for hydraulic jack use described here.

- Only use the hydraulic jack to lift objects, the hydraulic jack must not be used to lift animals or people. In any case the hydraulic jack can only be used when it is fitted on a machine or equipment according to the rules provided for in this manual. When using the hydraulic jack the utmost attention must be paid in the following cases:

- Sudden starts can be dangerous to people or objects, please make sure that the jack control plant works well and is appropriate to use.

- In order to avoid injuries, do not pull up or grab the rod or the parts of the jack while it is working.

- Do not overcharge the jack beyond the charge allowed.

- Do not use the jack as a support or as a grip to get into the machine or to rest objects on.

2 USE AND PRESERVATION OF THE "USE AND MAINTENANCE MANUAL"

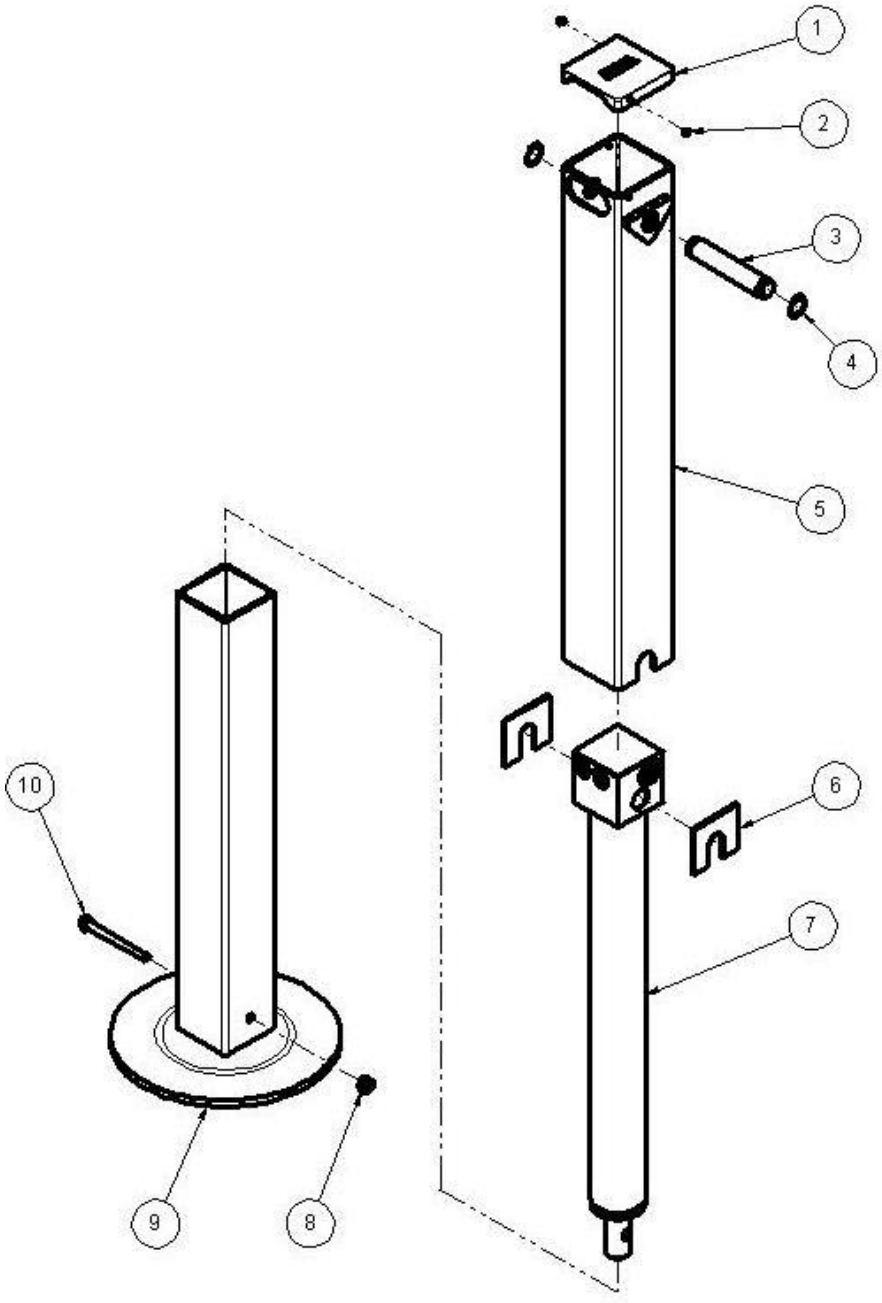
This use and maintenance manual is intended for **RIMA S.P.A.** customers and in particular for the people in charge of: installation, maintenance, overhauling, repair and for all persons concerned with hydraulic jack operation.
The parts of the manual to concentrate on most concern the operations with the highest degree of risk. These operations are disciplined by labour safety laws.
The information contained in this manual is useful to indicate correct hydraulic jack use according to the established design and construction purposes.
Moreover, information is supplied about handling, installation, maintenance, overhauling and problem solving, all respecting the limits established by the manufacturer detailed in this manual.
The use and maintenance manual is an integral part of the hydraulic jack and must be kept until such is disposed of.
It must be kept in a safe place, always close to the equipment so that it is ready for consultation at any time.
If the manual is damaged, the user must request a copy from the manufacturer who is obliged to supply one.
The Rima S.p.A. customer is strictly responsible for following and keeping the instructions in this manual and passing them to the final user.

Circumstances that release the manufacturer from any liability

- Improper use of hydraulic jack or use by persons not trained professionally
- Use contrary to the specific national standards
- Incorrect installation
- Serious failure to carry out the prescribed maintenance
- Unauthorised changes or interventions
- Use of non original spare parts or ones not specific to the model
- Total or partial failure to comply with these instructions
- Lack of documentation concerning possible maintenance and repair done
- Exceptional events (e.g floods, earthquakes, fire, car accidents or such like)

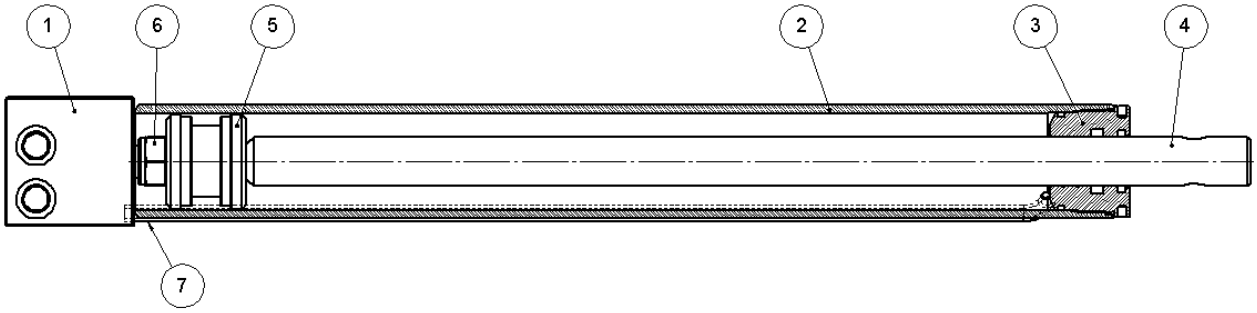
3 HYDRAULIC JACK COMPONENTS IN THE BASIC VERSION

Diagram of "PIPPO" hydraulic jack



1	CLOSING LID	6	SHIM PLATE
2	LID RIVETS	7	CYLINDER
3	CYLINDER FIXING PIN	8	PIN FIXING NUT
4	PIN SEEGER	9	INNER PART
5	OUTER PART	10	ROD FIXING SCREW

Diagram of the hydraulic cylinder for jack "PIPPO"



1 VALVE BLOCK
2 BODY
3 HEAD
4 ROD
5 PISTON
6 SELF-LOCKING NUT
7 OIL PIPE

Component features

Materials normally used for the different components:

Outer part: steel pipe S235JR UNI EN 10219-1:2006, with upper closing plate and with fittings according to models. Standard dimensions from 80 to 120 mm.
Inner part: steel pipe S235JR UNI EN 10219-1:2006, with fixed or articulated plate. Standard dimensions from 70 to 110 mm.
Footplate: Laminated with S235JR UNI EN 10025-1:2005, available in round, square and articulated models. Standard dimensions from 95 to 280 mm.
Cylinder fitting pin: steel bar S235JR UNI EN 10277-2:2000, available Ø25 with length from 112 to 155mm.
Cylinder block/base: S355 UNI EN 10277-2:2000, different dimensions and shapes according to cylinder features.
Cylinder head: cast iron EN-GJL-250 UNI EN 1561:1998, outer diameters from 60 to 120.
Cylinder piston: steel bar 9SMnPb28 (AVP) 10087:2000, diameters from 30mm to 100mm
Body: steel pipe E355 UNI EN 10305-3:2003, diameters from 40x5 to 120x10
Rod: chromed bar with C40E UNI EN 10083-1:2006, diameters from 20 to 80
Oil pipes: SS pipe for hydraulic circuits S235JR UNI EN 10277-2:2000, diameters from 8x1 to 14x2

Rima S.p.A reserves the right to change the above listed materials without notice, assuring the same correct functioning. Unless otherwise requested by the customer, the jacks are constructed using structural steel that can be normally used from -10/+80°C, but that are guaranteed from +20/+80°C as JR type.
If the customer needs a warranty for a lower temperature, he must request the appropriate materials.

4 IDENTIFICATION OF THE HYDRAULIC JACK AND MANUFACTURING DATE

Each cylinder has an internal code, the name of the company, the manufacturing month and year printed on the outside of the body.
As an alternative, this information can be written on a non-removable adhesive label.
Example of hydraulic cylinder stamping: RIMA 00 1ABC 01/11

5 PRELIMINARY PRECAUTIONS ON ASSEMBLING

Do not use the jacks before reading all the instructions in this manual.
The **RIMA S.P.A.** company forbids its hydraulic jacks to be put into service until the machine into which they are incorporated conforms to the directive 2006/42/EC; consequently **RIMA S.P.A.** declines all responsibility for the improper use of its hydraulic jacks.
Changing or transforming the hydraulic jack or its components without specific authorisation from **RIMA S.P.A.**. is forbidden.
Before being fitted to machines or equipment, the hydraulic jacks must be painted or galvanized to protect them against aggressive agents and rust. During the paint preparation process, make sure to cover the hydraulic jack parts that are not to be covered with paint (machine fitting holes, grease nipples, oil incoming holes etc). During the painting process the temperature must not be greater than 70°C. If the temperature should exceed this value, the cylinder inner seals could be damaged.
The supports and the movement devices of the machine and of the equipment to which the hydraulic jacks are connected as well as the accessible parts of the structures in which the hydraulic jacks are positioned must not have any sharp edges or burrs so that no injuries are caused when fitting or removing hydraulic jacks.
The hydraulic jack opening and closing movement must never be stopped by fixed or movable parts of the machine on which it is fitted; those parts could interfere with the movement of the jack or damage the oil connecting pipes.
To operate the hydraulic jack only use appropriate oil for hydraulic control that comply with the following specifications: ISO 11158 type HM - DIN 51524 part 2nd category HLP

6 TRANSPORT OR HANDLING INSTRUCTIONS

RIMA's standard packaging can be handled with standard lifting devices.
On receipt of the goods is essential to open the package and keep it in a protected area (not subject to weather conditions)

If the hydraulic jack is so heavy that it cannot be safely moved by hand, it must be lifted with means suitable for its mass. As a lifting sling, it is necessary to use at least two fabric belts which comply with directive 2006/42/EC, having the same length, hung around both ends of the hydraulic jack correctly and safely (do not use steel cables or chains in contact with the jack, because the surfaces could be damaged).

It is necessary to make sure that the lifting operation is performed safely by checking that both the means of lifting and the sling belts are capable of lifting the weight of the jack in safety.

7 INSTRUCTIONS FOR FITTING THE HYDRAULIC JACKS ON MACHINES AND/OR EQUIPMENT

The operations for installing the hydraulic jacks on machines and equipment must be performed by qualified personnel who have read and understood this instruction manual in all its parts.

It is necessary to pay attention that the supports and the moving devices of the machines and of the equipment to which the hydraulic jacks are connected are in a centred position with respect to the jack axis. In this way, there will be no transverse forces on the pipes, thus avoiding the premature wear of all the sliding hydraulic parts of the jack or breaking of the jack itself.

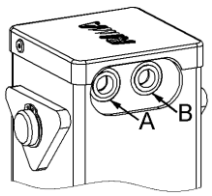
The connection of the hydraulic jacks to the supports and the moving devices of the machines and equipment, must be performed by welding carried out by specialized personnel according to ISO 3834 standard, or by means of fixing mechanical systems compatible with the fittings set by the design and constructed using material and tolerances suitable for safely supporting the maximum thrust of the hydraulic jacks.

After fitting on the machine, it is necessary to check for correct coupling; the hydraulic jacks must be tested to check correct functioning.

8 INSTRUCTIONS FOR USE

Make sure that the position of the machine on which the jack is assembled is stable and that the operation of the jack does not cause an overbalance or create a danger for people and objects. We recommend using our stabilizers on level and sturdy surfaces. In case of weak surfaces (e.g. hot asphalt, gritty soils, soft or recently ploughed/milled soils, damp clay, etc.) place the jack in the centre of a metal or wood panel;

its thickness and dimension should be appropriate to the weight carried and to the pliancy of the ground. To open the jack, send the oil under pressure into the "B" fitting (see diagram), send oil under pressure into the "A" fitting to close it.
Never exceed the operating pressure limit.



9 INSTRUCTIONS FOR MAINTENANCE AND CHECKING

Read this instruction manual before starting operations of maintenance and checking.
Any operations of maintenance or checking on the hydraulic jack installed on the machines must be performed by properly trained staff using suitable accident prevention equipment. These operations must be performed with the machine at a standstill, set in a stable position.

MAINTENANCE OPERATIONS. (To be performed every 50 jack working hours or at least twice a year). This operation consists of cleaning the outside of the hydraulic jacks and, if there is one, greasing the articulated plate.

CHECKING OPERATIONS. (To be performed every 50 jack working hours or at least twice a year). Check that the pipes slide easily without any problem or blockage and that there is no leakage of oil. Also check that there are no damaged or deformed parts either in the jack, the supports or in the machine moving devices to which the jacks are connected.

10 HYDRAULIC JACK OVERHAULING

All overhauling carried out during the warranty period must be done at Rima S.p.A. or at workshops expressly authorized by Rima S.p.A.
This operation is necessary when difficulties of use or damaged components are discovered after the checks have been made.
In these conditions, the machine or the equipment cannot be used and it is therefore necessary to disassemble the damaged hydraulic jack for overhauling. Trained staff must carry out the operations of removing the hydraulic jack from the machine and overhauling.

Instructions for disassembling the hydraulic jack from the machine or equipment

The operation to disassemble the hydraulic jack from the machine or equipment must be performed with the machine at a standstill, set in a stable position, with the engine switched off and with the key removed.
Before starting to disassemble use suitable means to securely anchor the parts of the machine or the equipment where the jack is connected, so that these parts cannot move during and after jack disassembly.
Before unscrewing the piping connecting the cylinder to the hydraulic system make certain that there is no pressure in the system, otherwise release it.
In order to support the jack during disassembly, use the means suitable for its mass. If the jack is so heavy that it cannot be handled manually in safety, it is necessary to sling it using fabric bands of a suitable capacity, as described in point 6. This operation must be performed in safe conditions.
Check the type of fixing for the jack and go on with disassembly as described depending on the type:

- Jack fixed using screws or nuts; remove them using appropriate wrenches or devices.
- Welded jacks: cut the welding with a grinder taking care not to damage the frame of both the machine and the tubular part of the jack.

Instructions for disassembling the hydraulic jack

A bench with a vice and a support are indispensable for the jack disassembly operation. This support must be adjustable in height and robust, to support the weight of the jack safely. In addition, if the jack is so heavy that it cannot be lifted manually, it must be lifted with a sling, as described in point 6, using means suitable for its mass.
To disassemble, proceed in the following way:

- Fix the outer side of the jack body in the vice and rest the inner part on a support; put some rags between the jack and the vice so as not to damage the paint.
- Unscrew the nut of the screw that fixes the cylinder rod to the inner part and take out the screw from its seat in order to take the inner part out.
- Then remove the two elastic rings on the pin that fixes the cylinder to the outer part of the jack, take the pin out of its seat (a pair of pliers or a rubber mallet can be used, taking care not to damage the pin or the pipe); then take the cylinder out.

Completely wash all the components of the hydraulic jack, preferably using naphtha, kerosene or another degreasing agent that is not aggressive and blow with compressed air, until the pieces are completely clean.
Scrupulously check all the components to identify if there are any damaged or worn parts. In particular, check the welding of the plate and of inner and outer pipe fittings.
If you find components worn to the extent that they can no longer be used, contact **RIMA S.P.A.** asking for spare parts (do not replace components with pieces that are not original).
You can easily find grease nipples if you have to replace them, because they have standardised sizes and profiles. If you experience any problem in finding them, please contact **RIMA S.P.A.**

Instructions for disassembling the cylinder

A bench with a vice and a cylinder support are indispensable for the cylinder disassembly operations. This support must be adjustable in height and robust, to support the weight of the cylinder safely. In addition, if the cylinder is so heavy that it cannot be lifted manually, it must be lifted with a sling, as described in point 6, using means suitable for its mass.
To disassemble, proceed in the following way: fix the rear fitting of the cylinder body in the vice and rest the front part on a support.
Use a spanner to unscrew the head. If this is difficult to unscrew, use a rubber or plastic mallet on the spanner, then proceed to completely unscrew.
Place an oil container under the cylinder so that the oil does not leak onto the ground. Then slide the rod complete with head and piston out.
Next, fix the rod in the vice using some rags or similar material so as not to damage the chromium-plated surface and support it from the piston side with an adjustable support, always taking care to place rags or other material between the support and the rod.
As far as the disassembling of the piston is concerned, it is necessary to check if it is threaded directly onto the rod and fixed with a grub screw or if it is fixed using Loctite glue or by a nut. In the first case it is necessary to remove the grub screw and then unscrew with a suitable spanner, in the second case it is necessary to warm the thread and unscrew; in the third case it is necessary to unscrew the nut. Then, after removing the piston, slide the head out of the rod.
Proceed to disassemble all the seals, both of the head and the piston, using tools that do not cut.
Completely wash all the components of the cylinder, preferably using naphtha, kerosene or another degreasing agent that is not aggressive and blow with compressed air, until the pieces are completely clean.
Scrupulously check all the components to identify if there are any worn parts. In particular, check the rod surface and the inside of the body to make sure that there are no scores or seizure. If you find components worn to the extent that they can no longer be used, contact **RIMA S.P.A.** asking for spare parts (do not replace components with pieces that are not original).
The seals and rod guides, if there are any, must be all replaced with new ones. These are easy to find as they have standardised sizes and profiles. If you experience problems in finding them, please contact **RIMA S.P.A.**

Instructions for reassembling the cylinder

Prepare the new sealing kit, checking that they are the same as the original ones. Check that the seals, the components they are fitted to and the assembly tools are all perfectly clean. The assembly of the sealing parts does not present any particular difficulty, given the good elasticity of the material used.
To fit the head seals, lubricate them with hydraulic oil and insert them into the hollows provided. Work on them uniformly using a non-cutting tool, until fully inserted.
To fit the seals on the piston, lubricate them with hydraulic oil and fit the O-Rings into the specific piston hole seat. The main seal, composed of five parts, must be fitted outside the piston, using a non-cutting tool to fit the rubber part without deforming it. The other parts can be fitted with or without using a tool.
Place the welded coupling part of the rod into the vice and support it on the other side with an adjustable support, taking care to place rags or other material between the support and the rod so as not to damage the rod.
Fit the piston by pressure fitting it onto the turned rod and then tighten the self-locking nut using a manual or automatic tool. Apply the correct tightening torque as set in the standard tables.
For the version with the threaded hole piston, screw it using an appropriate spanner, tighten well and then fit the suitable anti-unscrewing device provided.
Place the welded coupling part of the cylinder body into the vice and support the front part with an adjustable support, in such a way that the cylinder body remains horizontal.
Before sliding in the rod complete with its components, it is necessary to lubricate the seal on the piston and the inside of the cylinder body with hydraulic oil or Teflon grease. Then slide it into the pipe, holding it in axis and keeping the piston seal centred in the first threaded part of the bore until it passes the chamfer of the thread end. Then push on the rod until the piston is fully inserted. If the piston is heavy, for this operation it is advisable to keep it raised using means suitable for its mass, slinging on the centre of the rod with a belt as described in point 6.
Screw the head onto the cylinder body with the appropriate spanner until fully screwed on and hit lightly with a rubber mallet onto the spanner to block the head.

Carry out a sliding test to check that the rod slides freely in the bore without sticking.
Warning: if the cylinder is not fitted immediately on the machine, it is necessary to place special plastic plugs into the threaded holes to prevent any dirt entering.

Instructions for reassembling the hydraulic jack
A bench with a vice and a jack support are indispensable for the jack reassembly operations. This support must be adjustable in height and robust, to support the weight of the jack safely. In addition, if the jack is so heavy that it cannot be lifted manually, it must be lifted with a sling, as described in point 6, using means suitable for its mass.
To reassemble, proceed in the following way: fix the outer part in the vice (place some rags to protect the paint of the jack being damaged by the vice) and insert the cylinder until the holes to position the fixing pin are aligned; when the pin is centred fit the two elastic rings..
To assemble the inner part, place the outer part with the cylinder assembled in the vice, insert the inner pipe until the holes on the pipe and the rod are aligned; then insert the screw and block it with the self-locking nut applying the correct tightening torque as set in the standard tables.

11 REPAIR AND SPARE PARTS

For any repair operation and/or the replacement of the various spare parts of the hydraulic jack, not due to normal maintenance or overhauling, as indicated in the previous chapters, please contact **RIMA S.P.A.**, which will supply or give information on the subject.

12 DISPOSAL

Hydraulic jack disposal must be carried out in conformity with the laws in force; therefore, the parts made of metal should be scrapped while those made of plastic or rubber should be disposed of in appropriate containers.
When possible, grease and oil should be recycled and taken to the obligatory Cooperative used mineral oil deposit. (www.coou.it).